MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
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SRM Number: 913a
MSDS Number: 913a
SRM Name: Uric Acid
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Uric Acid

Description: This material is supplied in one bottle containing 10 g of crystalline uric acid.

Other Designations: Uric Acid [7, 9-dihydro-1H-purine-2, 6, 8 (-3H)-trione; 2, 6, 8, -trioxypurine; 1H-purine-2, 6, 8 (-3H)-trione; purine-2, 6, 8-triol]

Name	Chemical Formula	CAS Registry Number
Uric Acid	$C_5H_4N_4O_3$	69-93-2

DOT Classification: No classification assigned.

Manufacturer/Supplier: Available from a number of suppliers; current source, Sigma-Aldrich.[1]

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Component	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Uric Acid	~100	Mutagenic human lymphocyte system: 10 mmol/L
		Reproductive effects, Rat, 4-week male, Oral TD_{Lo}: 5040 mg/kg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Uric Acid	
Appearance and Odor: off-white powder; no odor	**Melting Point:** >300 °C, decomposes
Relative Molecular Weight: 168.11	**Vapor Pressure:** not applicable
Specific Gravity (Water = 1): 1.9	**Vapor Density:** not applicable
Boiling Point: decomposes	**pH:** acidic in solution
Water Solubility: slightly soluble	**Solvent Solubility:** soluble in glycerol, alkali hydroxide solutions, concentrated sulfuric acid

[1]Identification of certain commercial materials in this MSDS does not imply recommendation or endorsement by the National Institute of Standards and Technology, nor does it imply that the materials are necessarily the best available for the purpose.

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Flash Point: Not Applicable **Method Used:** Not Applicable **Autoignition Temperature:** Not Applicable

Flammability Limits in Air (Volume %): **UPPER:** Not Applicable
LOWER: Not Applicable

Unusual Fire and Explosion Hazards: This material is a negligible fire hazard; does emit toxic fumes under fire conditions. See Section V. "Reactivity Data: Hazardous Decomposition or Byproducts".

Extinguishing Media: Use water spray, carbon dioxide, dry chemical, or appropriate foam.

Special Fire Procedures: Fire fighters should wear self-contained breathing apparatus (SCBA) and protective clothing to prevent contact with skin and eyes.

SECTION V. REACTIVITY DATA

Stability: **X** **Stable** _____ **Unstable**

Conditions to Avoid: None reported.

Incompatibility (Materials to Avoid): Uric Acid is incompatible with acids, bases, and oxidizing materials.

See Section IV. **"**Fire and Explosion Hazard Data".

Hazardous Decomposition or Byproducts: Thermal decomposition of uric acid can produce toxic fumes of carbon monoxide, carbon dioxide, nitrogen oxides, and hydrogen cyanide.

Hazardous Polymerization: _____ **Will Occur** **X** **Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Health Hazards (Acute and Chronic): Uric acid is irritating to eyes, respiratory system, and skin. May be harmful if swallowed.

Inhalation: Inhalation of uric acid is an irritant to the respiratory system. There is no data available for acute and chronic exposure to the respiratory system.

Skin Contact: Skin contact of uric acid is an irritant. There is no data for acute and chronic exposure to the skin.

Eye Contact: Eye contact of uric acid is an irritant. Acute exposure may cause irritation and redness. Prolonged or repeated exposure to the eyes may cause conjunctivitis.

Ingestion: Ingestion of uric acid, in acute cases, may cause a feeling of pressure in the head, tightness of the face, a burning sensation, chest pains, and seizures. Chronic exposure of uric acid causes symptoms similar to acute exposure.

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: If inhaled, move the victim to fresh air. If breathing becomes difficult, call a physician. Give artificial respiration if the victim is not breathing, and get immediate medical attention.

Skin Contact: Flush with copious amounts of water for at least 15 minutes, while removing contaminated clothing and shoes. Obtain medical attention, if needed.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Obtain medical assistance.

Ingestion: If ingested, wash out mouth with water provided person is conscious. Contact a physician immediately.

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Avoid raising dust. Wear protective equipment. Mix with solid sodium bicarbonate. Place in a clean, dry container and hold for later disposal. If necessary, ventilate area and wash spill site after removal of dry chemical spill.

Waste Disposal: Follow all federal, state, and local regulations.

Handling and Storage: Persons handling this material may use respiratory protection under conditions of frequent use or heavy exposure. The specific respirator selected must be based on contamination levels found in the workplace, must be based on the specific operation, must **NOT** exceed the working limits of the respirator, and must be jointly approved by the National Institute for Occupational Safety and Health (NIOSH) and the Mine Safety and Health Administration (MSHA). Additional protective clothing, such as gloves, lab coats, and splash-proof or dust-resistant safety goggles, should be worn.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: OHS24707 Uric Acid MSDS. Available: MDL Information Systems, Inc., June 2003.
Merck Index, 11th Ed., 1989.
Registry of Toxic Effects of Chemical Substances, RTECS DIALOG file 336; Available: MDL Information Systems, Inc. (accessed August 2003).

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was carefully prepared, using current references; however, NIST does not certify the data on the MSDS. The certified value for this material is given in the NIST Certificate of Analysis.